NSF Discussion
DPS Agencies Night
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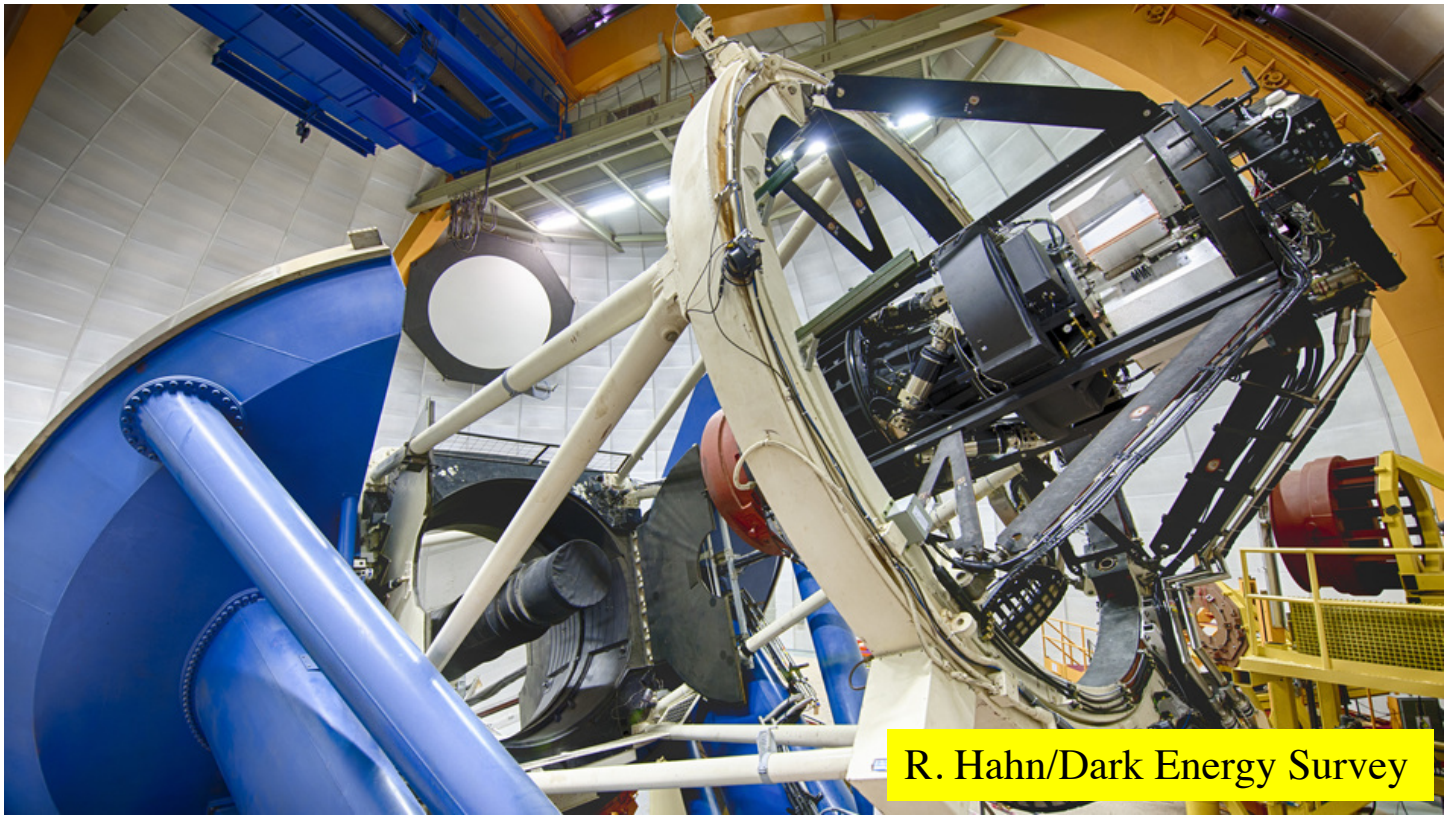
High-Level Summary

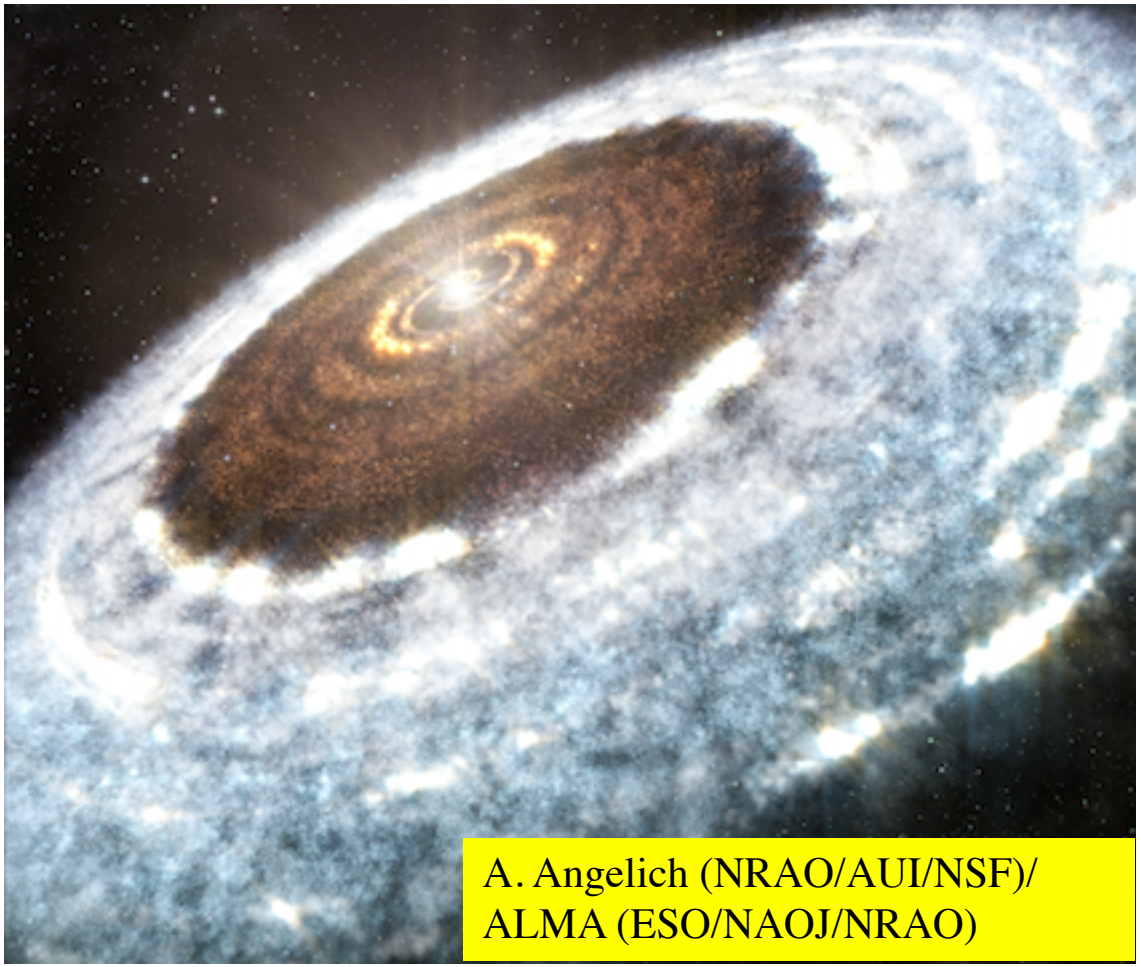
- Outstanding science opportunities offered/developed
  - ALMA, EVLA, Dark Energy Camera, GPI, DKIST, LSST
  - Variety of Individual Investigator Programs
  - NSF requested ~$87M for AST facility construction in FY 2017
- Partnerships with NASA and DOE have strengthened
- Data-enabled science continues to grow in importance
- LIGO detection of gravitational waves
- Mid-decadal review released
- Unknown prospects for budget increases this decade
  - Next 1.5 yr are critical for divestment activities
- Continued progress at the science frontiers

Blanco Telescope: Dark Energy Camera



- Dwarf planet 2014 UZ224 discovered in survey image (500 km diameter, at 90 AU from Sun) (Gerdes et al., U. Michigan)
- Comet P/2015 PD229 (Jupiter family of comets) (Cameron et al., U. Rochester)

Snow Line in FU Orionis

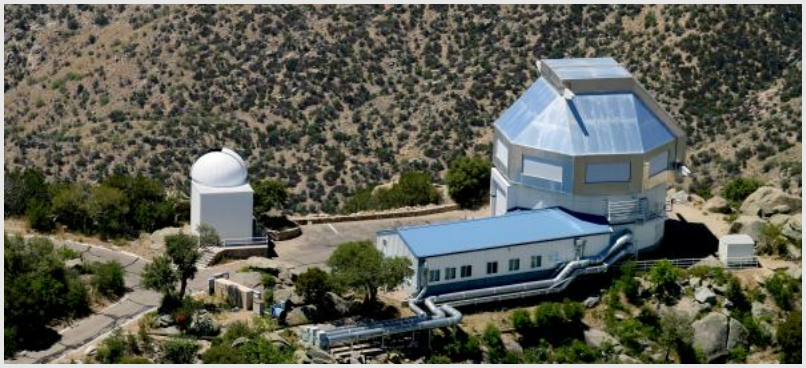


- FU Ori imaged by ALMA in outburst, at 12 AU resolution
- Abrupt optical depth change at 42 AU attributed to condensation of water at the water-snow line. (Cieza et al., 2016, Nature 535, 258)

NN·EXPLORE

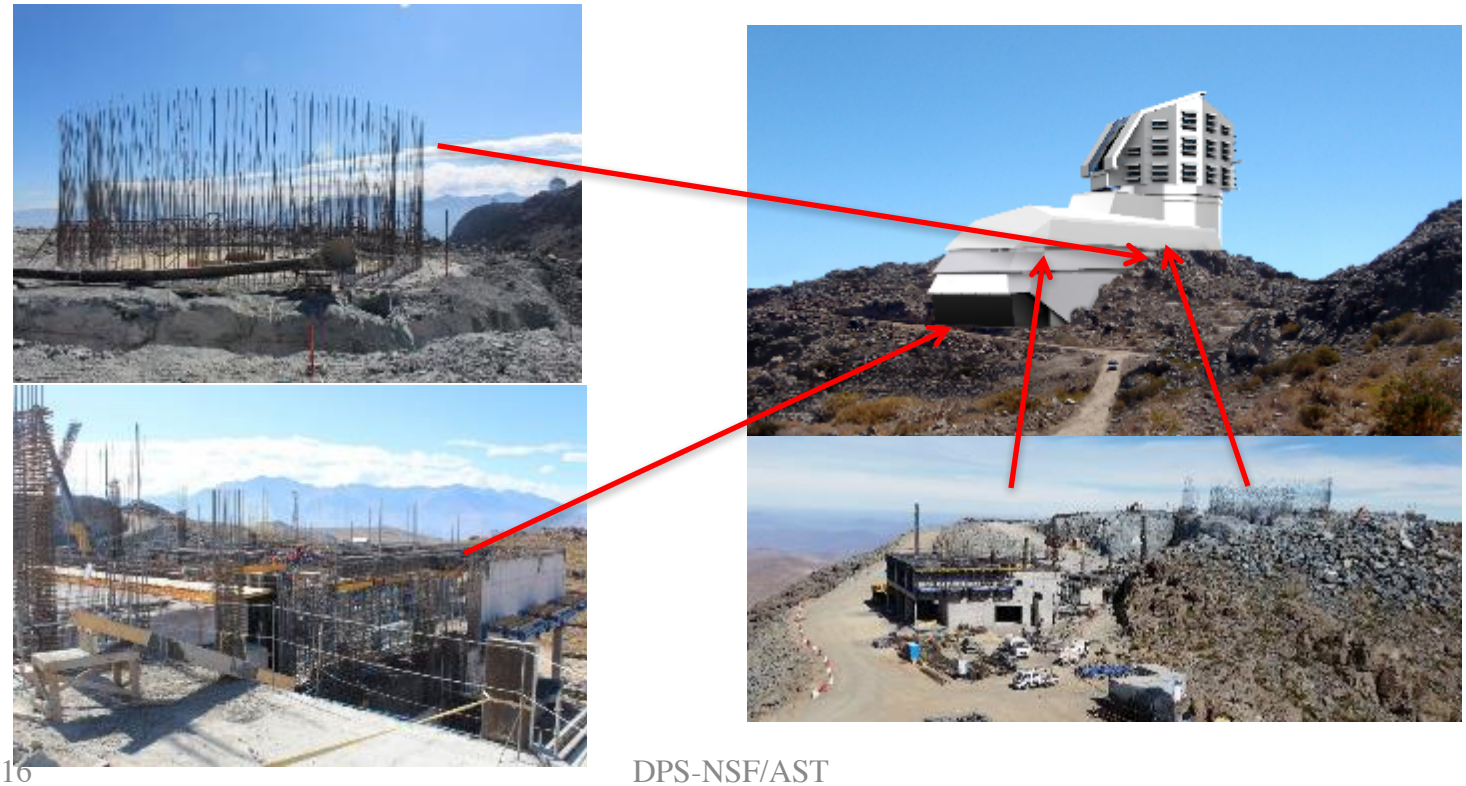
Partnership for Exoplanet Discovery and Characterization

NN-EXPLORE is a joint NASA / NSF program for exoplanet science

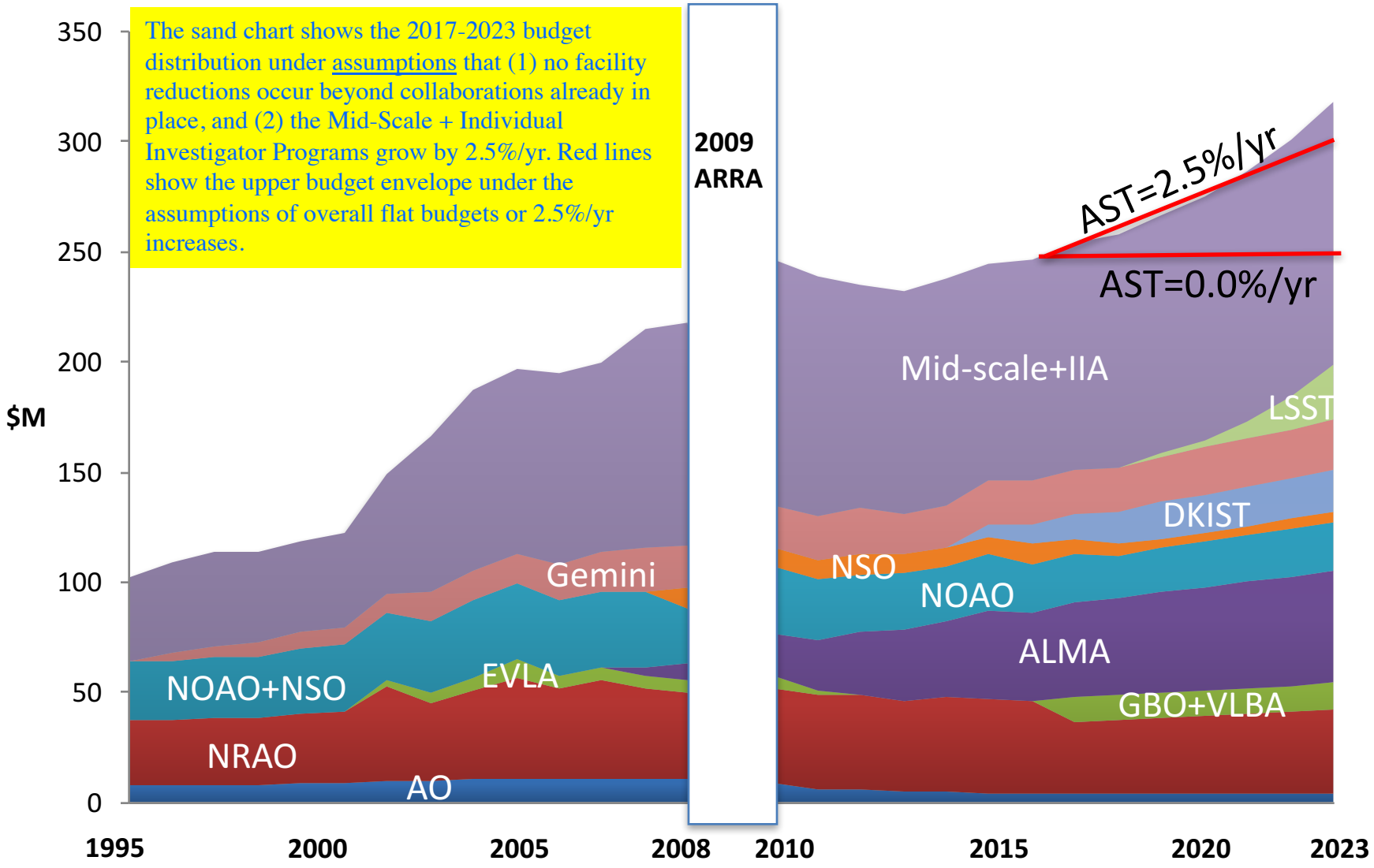
Stage 1: 2015 - 2018	Stage 2: 2018 - TBD
• Exoplanet – targeted GO program with existing instrumentation using NOAO share (~50%) of WIYN 3.5m time • NASA has solicited a facility-class Extreme Precision Doppler Spectrometer (EPDS) for the WIYN telescope. Commissioning in 2018/2019 • Instrument design selected: NEID (NN-Explore Investigations with Doppler Spectroscopy), S. Mahadevan, P.I. (Penn State University)	• Exoplanet-targeted GO and guaranteed time program at WIYN with NEID • Data management system to serve NEID data products (in coordination with NExScI) • Community access to NEID instrument for observations that support NASA missions 

Large Synoptic Survey Telescope

- Construction progressing, late 2022 start date for 10-yr survey.
- Inventory of solar system is one of four defining science projects.
- Updated study of NEO detection capabilities in progress.
- Maximizing Science in LSST Era: Study of Needed OIR Capabilities
  - Solar system topics: Using Small Bodies to Understand Cosmochemical Evolution
  - NEOs, Main-Belt Asteroids, Main-Belt Comets, TNOs, Comets



Hypothetical Budget Runouts for AST



Community Recommendations to NSF

- August 2012: AST Portfolio Review (recommended by decadal survey) recommended a number of facilities for divestment, and others for future consideration, depending on budget and other factors.
- March 2016: Astronomy and Astrophysics Advisory Committee Recommendation: “Strong efforts by NSF for facility divestment should continue as fast as is practical.”
- April 2016: GEO/AGS Portfolio Review (Recommendation 9.11): Recommendation to reduce GEO/AGS contribution to Arecibo operations from $4.1 million/yr to $1.1 million/yr by 2020. (MPS/AST also spent $4.1 million in FY 2016)
- August 2016: National Academies mid-term decadal assessment (Recommendation 3-1): “National Science Foundation (NSF) should proceed with divestment from ground-based facilities which have a lower scientific impact, implementing the recommendations of the NSF [AST] Portfolio Review, that is essential to sustaining the scientific vitality of the U.S. ground-based astronomy program as new facilities come into operation.”

Facility Futures
(as of October 17, 2016)

Telescope	Status
KPNO 2.1m	Caltech-led consortium (Robo-AO) operating for FY 2016-2018
Mayall 4m	Slated for DESI; bridge from NSF to DOE; NSF/DOE MOU for transition
WIYN 3.5m	NOAO share to NASA-NSF Exoplanet Observational Research Program; NSF/NASA MOU in place; NASA instrument selected
GBO	Separation from NRAO in FY 2017; ~25% partnership in place
LBO/VLBA	Separation from NRAO in FY 2017; MOU with US Navy in place
McMath-Pierce	No obvious partner opportunities; very small user community
GONG/SOLIS	SOLIS is off Kitt Peak; GONG refurbishment; Interagency Agreement with NOAA signed (NOAA sharing GONG operations costs)
Sacramento Pk.	University consortium in development, and NSF funded NMSU for transition to consortium; started Environmental Impact Statement
Arecibo	Formal environmental review in process; completion of Environmental Impact Statement and issuance of Record of Decision targeted for 2017
SOAR	Post-2020 status to be reviewed

Environmental Reviews-Targeted Timeline

- May 2016: Initiated Environmental Impact Statement (EIS) process and consultation under National Historic Preservation Act (NHPA) Section 106 for Arecibo.
- July 2016: Began EIS and NHPA process for Sacramento Peak Observatory.
- FY 2017: Consider EIS and NHPA process for Green Bank Observatory, Long Baseline Observatory (formerly VLBA), and McMath-Pierce Solar Telescope.
- June 2017-Early 2018: Conclude formal environmental reviews and consideration of alternatives. Select preferred alternatives in Record of Decision, which incorporates environmental reviews and many other considerations. Begin implementation.

- No decisions have been made, or will be made until issuing a Record Of Decision for a facility or telescope under formal consideration.

Arecibo EIS Process to Date

- NSF has concluded scoping process, and expects to release Draft EIS in autumn 2016.
- Also initiated consultation process under Section 106 of National Historic Preservation Act to evaluate potential effects to potential historic components to Arecibo.
  - State Historic Preservation Officer; Advisory Council on Historic Preservation
- Dear Colleague Letter NSF 16-144 (Sept. 30) announced upcoming solicitation for operation of Arecibo with reduced funding.
- Aiming to release solicitation by end of 2016.

Changes in AST Grant Programs for FY 2017

- For FY 2017, AST will run a pilot program with NO PROPOSAL DEADLINE for the Planetary/Exoplanetary and Solar portions of the Astronomy and Astrophysics Research Grants (AAG) program.
  - Purposes: Understand and resolve issues with proposal handling and merit review; alleviate impact of life events for proposers; investigate impact on proposal load over the year; enable proposal file updates for minor errors.
  - Solicitation NSF 16-602: Solar and Planetary Research Grants (SPG).
  - Declined proposals may not be resubmitted for 12 months.
- The rest of AAG will run as before, with a November 15, 2016 proposal deadline (Solicitation 16-574).
- Budget breakdowns between AAG and SPG will remain similar to FY 2016.
- Faith Vilas will now describe SPG.

Backup slides follow

Target Dates for Arecibo Environmental Impact Statement (EIS)